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RESEARCH REPORT

THE RELATIVE IMPORTANCE OF COUNTRY, INDUSTRY AND FIRM EFFECTS ON FIRM PERFORMANCE

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ABSTRACT

The globalization process has created considerable speculation on the impact of the home country environment to a firm's competitive advantage in international markets. Using a random effects model that is partly induced from the concept of comparative advantage and competitive advantage and partly following the descriptive modeling of performance determinants, this paper explores the quantitative impact of home country environment on the performance for firms across 6 countries. The paper uses two value-based measures of firm performance, i.e. risk adjusted and cash-flow based. The results indicate that the importance of country and industry factors is low and firm-specific factors dominate performance both across and within countries. The results also show that global industry effects are becoming increasingly more important than country effects, while comparative advantage factors, while small, are significant in explaining performance across countries within the same industry.

Key Words: *Globalization, Country, Performance*

INTRODUCTION

What drives performance? This is the key question of research in strategic management. Strategy is the alignment of the firm's internal character, its competencies and deficiencies, with the nature of the external environment, its opportunities and challenges, in the pursuit of competitive advantage. It is the creation of unique competencies and the leverage of such competencies into defensible positions vis-à-vis the external environment. In these terms, both the external environment and the firm's internal character are central to strategy and, hence, performance.

One set of views within strategy (Porter, 1980) tends to emphasize that the external environment is the key determinant of performance and internal decisions are a function of external variables. The second view, the resource-based view (Wernerfelt, 1984; Dierickx and Cool, 1989; Barney, 1991), favors an opposite explanation to firm success – that internal aspects of the firm drive firm strategy.

Empirical studies have widely given support to the resource-based view (Rumelt, 1991; McGahan and Porter, 1997; Hawawini, Subramanian and Verdin, 2003).[1] The results suggest that the external environment is much less a source of performance variance among firms when compared with the effects of the firm variables. In these studies, the firm's external environment is modeled in terms of two variables – industry and year (a proxy for macro-economic factors).

However, the globalization of business and the reality of international competition suggest that the range of external factors that influence firm competitiveness comprise more than just the industry. In particular, firms operate in a national context comprising its economic, technological, political and cultural dimensions, affecting how the firms develop their competencies. Traditionally, strategy scholars have interpreted country influences through their effect on industry (Grant, 2002). Following this assumption,

[1] Even though McGahan and Porter (1997) find firm effects dominate industry effects, the intention was to show that the importance of industry structure to performance may be much higher (19%) than identified earlier by Rumelt (1991) (4%).

past research focused instead on debating the relative industry versus firm influences on strategy formulation as the source of competitive advantage, and has been largely silent on the effect of country factors.[2]

While there are specific theoretical bases for the firm versus industry debate, examining the country impact is somewhat more complicated due to the lack of a single theoretical explanation. Indeed, there are multiple mechanisms by which a country can influence the performance of the firm – macro-economic trends, factor endowments, and the legal, social and cultural characteristics. This study therefore investigates the impact of home country effects in combination with industry effects on firm performance by looking at different theories and evidence, in particular international economics, finance and business.

As measures of performance, we use two risk-adjusted measures that reflect residual income. One measures residual income at the operational level and is the firm's net operating profit adjusted for tax and capital costs. A second measure is a version of Tobin's Q and is the firm's market value less the amount of capital employed. We also use Return on Assets to enable comparisons with past studies. We use a five-year sample of firm-level data from six countries, three of them large open economies and three small open economies, to test the effects of country, industry, firm and global economic effects. We employ a variance components estimation, adapted from studies in strategic management research, to identify the contribution of these different factors to the variance in firm performance.

In the next section, we examine the external and internal factors that drive competitive advantage – the national context, industry environment and firm resources and capabilities. This is followed by a discussion of the statistical model and the method used to test the model, and a description of the data and sample used. Finally, we present

[2] The empirical studies also are based on US data sets, allowing no scope for investigating cross-country effects.

the empirical results and discuss them in light of past evidence on country and industry factors.

LITERATURE OVERVIEW

The study of performance determinants is a central question for strategic management. In investigating the external and internal sources of competitive advantage and their relative importance, research has considered industry structure as the main candidate for external factors and firm-specific factors as the internal factors. Technological change, falling trade and capital barriers have expanded the source of competition in many industries. While industry structure is a key external factor, in situations of international competition the sources of competitive advantage can be rooted in the national context that enabled the firm to establish its competencies in the first place. Since the theoretical rationale for industry and firm effects have been widely documented in strategic management (Rumelt, 1991; McGahan and Porter, 1997), we instead focus our review primarily on the impact of country factors.

Overview of Country Effects: How important are they to firm performance?

Direct Effects

A large amount of research in the field of international economics and finance points to some persistent home country effects. Even though international trade had consistently grown over the past decades, doubling in the 1980s and again in the 1990s, the evidence in international economics is that home country bias persists in at least three aspects.

First, several studies indicate that after controlling for economic size and distance, trade between regions within countries is much higher than between countries (McCallum, 1995; Heliwell, 1998; Chen 2000).[3] Some explanations for this bias in trade are exchange

[3] This is true even for countries that are considered to be highly integrated. McCallum shows that trade between Canadian provinces is higher than that between US and Canadian provinces by a factor of 20.

rate risks, tariffs, non-tariff barriers, transportation costs, and high elasticity of substitution in consumption (Obstfeld & Rogoff, 2000), and the segmentation of customer demand due to cultural differences. Second, evidence indicates that domestic investments are financed by domestic savings, even in economies considered to be relatively well integrated between themselves. Across OECD countries, the correlation between average savings and investments, though decreasing over time, have remained strong (Feldstein and Horioka, 1980; Obstfeld and Rogoff, 2000).[4] Further, in many OECD countries, current accounts tend to be relatively small as a percentage of savings and investment. In essence, this means capital does not always seem to cross boundaries to seek the best returns. The reasons are that cross-border investments entail many of the similar risks and costs that come with cross-border trade for consumption. Finally and related to the second, is the well-known effect of a home country bias in the equity portfolios of investors. French and Poterba (1991) demonstrated that US citizens held 94% of their equity investments in US stocks and in the case of Japan, this figures reaches to 98%. However, by the mid-1990s, US investors held approximately 10% of their equity holdings in foreign stocks.[5]

How does a home bias in trade and the source of capital influences firm competitiveness? First, the home bias in internal trade suggests that some markets may be more favorable for attaining minimum efficient scale (MES) than others. The size of the home market is relevant since it suggests whether firms can achieve the minimum efficient scale. If the size of the home market is less than the minimum efficient scale of the industry, firms from that country may face a competitive disadvantage in terms of costs when competing with rivals from larger domestic markets that operate at MES.[6][7] Second,

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Heliwell finds this to be 12. Chen shows that for countries of the European Union is about 2.1 to 3.6 times.

[4] See Coakley, Kulasi, and Smith (1998) for a survey.

[5] For a recent review, see Lewis (1999).

[6] Some firms try to overcome this by having higher overseas sales compared to domestic sales (see Sleuwaegen, 1988 for firms in Belgium and Switzerland). In this respect, firms with small home markets may be forced rather than choose to penetrate foreign markets to achieve operations at sufficient scale. While this could mean penetrating overseas markets is a solution for a small home market, such an option for a number of reasons is more costly and time-consuming than home markets.

the impact of home bias in investments and savings influence the cost of capital. An economy with higher level of savings, when coupled with the equity bias, allows the nation's companies to enjoy a lower cost of capital. Firms based in countries with lower costs of capital may find more projects to be profitable than firms that are based in countries with lower savings.

In addition to the effects of the bias in trade and investment, country factors influence firm performance in other distinct ways. Country differences in terms of economic, social and legal systems influence firm behavior and strategies (Porter, 1990). Countries are in different stages of economic development, they have different interest rate, exchange rate and tax policies, and different legal systems. Two country-oriented factors that have attracted attention in international business research are cultural differences and corporate governance systems.

Cultural value differences may exist with regards to how employees perceive and react to individualism versus collectivism, power distance, uncertainty avoidance and quantity versus quality of life (Hofstede, 1980). Differences in national value systems may explain differences in the types of strategies pursued by firms from different countries (Hofstede, 1985; Porter, 1990). A second factor that is attracting growing attention are differences in corporate governance regimes across countries (Leighton and Garven, 1996). These differences relate to the structure of financial systems and the role of banks, financial regulation, and the ownership and control of firms. For instance, there are high levels of ownership concentration in Europe and the Far East but not in the UK and US. Similarly, close relations between banks and firms exist in some countries and not others (Franks and Mayer, 1994). There may be differences in the resolution of agency problems between the Anglo-Saxon and the European systems, as in the former a major source of finance tends to be dispersed equity while in the latter capital structure may be dominated by long-term finance such as block equity and bank finance. In general,

[7] The size of the home market does not by itself does not necessarily mean that firms operate at minimum efficient scale (MES). Fragmentation of the domestic market may hamper the achievement of MES.

existing theory on culture and governance primarily explains factors that influence firm behavior and organizational arrangements in different country settings, but is silent on the cultural and institutional arrangements that are likely to enhance performance in a cross-country comparison.

The evidence presented above indicates the importance of the home country in terms of demand, capital, and other factors such as governance and cultural contexts. Such factors may influence firm-level profit differences to the extent that such country-specific attributes are important for performance, and the stock of such attributes vary among countries. Evidence linking firm performance and country factors is generally characteristic of international finance research.

Early studies (Lessard, 1974, 1976; Solnik, 1974; Beckers, Connor and Curds, 1986; Solnik and de Freitas 1988; Drummen and Zimmerman, 1992) that examined the impact of global, national and industry factors on individual stock returns found that national factors dominate the explained variance in stock returns. The conclusion was that diversification across countries provides greater possibilities for risk reduction than diversification across industries.

Indirect Effects – Comparative Advantage and Firm Effects

Cross-country comparison and advantage of one nation's environment over another is often seen from the perspective of comparative advantage. Countries differ in the conditions that determine the level of competitiveness of different industries, and thus a specific country may confer a comparative advantage on local firms in a particular industry. For example, as the minimum efficient scale can be expected to vary by industry, the size of domestic demand is an important factor that determines the types of industries in which the country is likely to be competitive. The size of the home market then influences the types of industries in which the nation's firms can effectively

compete internationally (Krugman,1980).[8] In industries where competitive advantage is based on cost leadership (Porter, 1980), companies with large domestic markets for a given level of factor endowments may have an advantage over rivals from smaller home markets.

A second factor that drives comparative advantage is factor endowments and their relative scarcities and prices (as illustrated in the Heckscher-Ohlin models of resources and trade (Krugman and Obstfeld, 1997)). Other factors that have been identified as enabling a firm's competitive advantage relate to its co-location in regions that are subject to agglomeration advantages, such as an infrastructure of support industries (Porter, 1990) and the propensity of the market to accept new and innovative products (Krugman, 1980).[9] In general, if firm competitive advantage depends on co-location in an industry cluster, then any country effects will be specific to particular industries and hence will not be picked up by the direct country effects.

In addition, country-specific factors can influence firm performance when country-business cycles are not correlated, noted by several financial economists (Lessard, 1976; Roll, 1992). The growing integration of capital markets would suggest that business cycles across the world move in the same direction, but occasional crises can have a big impact on output – the recent cases have been the 1997 Asian crisis, the Russian crisis and the collapse in output and employment in Argentina.

Other Performance Drivers: Industry and Firm effects

In industrial organization economics, profit differences are considered to be the result of structural differences among industries. (Bain, 1956; Porter, 1980). If this view gives a fairly accurate reflection of reality, then inter-industry profit differences should on

[8] Rowthorn and Hymer, (1971), and Buckley, Dunning and Pearce (1978) find that the growth rate of large multinationals is correlated with the growth rate of the home economies and the industrial structure of the home nation.

[9] For a discussion on the effect of co-location on the competitive advantage, see the literature on economic geography (Clark, Feldman and Getler, 2000). Also Porter and Scott (2001) discusses the importance of industry clusters to innovative activity of firms (rivalry based on new products, access to complementary assets, etc.).

average be substantially larger than intra-industry variances in performance. Empirical research has instead identified significant intra-industry variance when compared to inter-industry variances (Stigler, 1963; Hawawini et al, 2001).

The resource-based view argues that heterogeneous firm resources that are difficult to imitate, are not traded on factor markets and can only be developed over time, drive firm performance (Wernerfelt, 1984; Dierickx and Cool, 1989). In this view, industry structure is a result of firm choices and firms can adapt and change industry structure through their resource-based strategies. Empirical evidence provides robust support for the resource-based view that firm performance is driven more by internal factors than structural elements (Rumelt, 1991; McGahan and Porter, 1997).

Summary of Literature Overview

The overview identified different types of country factors and the diverse mechanisms by which they influence firm performance. While there are good reasons to suppose that some of these mechanisms may be converging across countries, such as in financial and factor markets, the evidence seems to indicate that this process is slow even in economies considered to be rather highly integrated. Further, coupled with the importance of local agglomerations to innovation and the lack of correlation among business cycles, particularly in times of shocks, we would expect a significant influence of home country effects on firm performance. Although it is not possible to distinguish as to which of the mechanisms drive the country effect, there are still good reasons to examine the home country effect in conjunction with other factors such as industry and firm factors that also influence performance.

MODEL AND METHODS

In strategic management research, several studies have modeled the determinants of firm performance using a descriptive approach (Rumelt, 1991; McGahan and Porter, 1997). The key variables of interest were the relative importance of industry and the firm-specific factors for performance, while the impact of the country-specific factors were generally considered to be part of the analysis of international management. In other words, the models are silent on the relevance of geography to firm competitiveness.

The descriptive models seen in Rumelt (1991) and McGahan and Porter (1997) specify four major sources of variation in performance consisting of stable and transient effects of a firm's industry, the firm's competencies, and the effects of the particular year for all firms.[10] Following the arguments outlined earlier on the influence of the home country on a firm's competitive success, we extend the performance determinants models of strategic management (Rumelt, 1991 and McGahan and Porter, 1997) by including three types of country effects - a stable country effect, a transient country effect, and a comparative advantage effect (i.e. country-industry interaction). A stable country effect captures the influence of long-term and persistent country factors. A transient country effect captures the effect of asymmetries in business cycles across countries.

We specify the following random effects model.

$$r_{kijt} = \mu_{....} + \alpha_k + \beta_i + \phi_j + \gamma_t + (\alpha\gamma)_{kt} + (\beta\gamma)_{it} + (\alpha\beta)_{ki} + \varepsilon_{kijt} \qquad (1)$$

where $\mu_{....}$ is a constant equal to the overall mean (the four dots indicate that it is an average over the k, i, j and t index); α_k is a random country effect, where k = 1 ... p denotes any one country as k; β_i is a random industry effect where i = 1...q denotes any one industry as i; ϕ_j is a random firm effect where j = 1...r denotes any one firm as j; γ_t is a

[10] Obviously, as these were one-country models, the year effect is a common effect for all firms in a given country for a particular year. In a cross-country model (of the type of this study), such a factor would reflect the global effect of the year for all firms in *all* the countries under study.

random year effects where t denotes any one year as t; $(\alpha\gamma)_{kt}$, $(\beta\gamma)_{it}$, and $(\alpha\beta)_{ki}$[11] are random country-year, industry-year and country-industry interaction effects and ε_{kijt} is a random error term.

The main effects (α_k, β_i, ϕ_j and γ_t) and the interaction effects $(\alpha\gamma)_{kt}$, $(\beta\gamma)_{it}$, and $(\alpha\beta)_{ki}$ follow a normal random distribution with mean zero and variance σ^2_{α}, σ^2_{β}, σ^2_{φ}, σ^2_{γ}, $\sigma^2_{\alpha\gamma}$, $\sigma^2_{\beta\gamma}$ and $\sigma^2_{\alpha\beta}$, i.e. ε $(0, \sigma^2)$. The random independent effects specified in the above model are generated by random processes that are independent of each other, i.e. each of the main effects is an independent random solution from an underlying population that is normally-distributed. The advantage of such random modeling is that we can hypothesize on the presence and importance of each type of effect without being interested in particular levels of that effect, i.e. we are not interested in the impact of a particular country, say US or Germany, but are interested in the influence of countries generally.

Country-specific influences include factors that impact all firms in a country such as a country's economic structure, institutional and legal framework, infrastructure, social networks and culture. The transient country effect measures the impact of business cycles that are not correlated among countries and affect only certain countries and not others. Stable industry effects reflect the influence of structural characteristics of industries on the performance of firms while the transient component of industry effects, i.e. industry-year factor, measures the sensitivity of profitability to the impact of business cycles on the industry. The country-industry factor represents the comparative advantage effect on firms. If countries differ in the conditions that determine the level of competitiveness of different industries, then the interaction between the country and the industry should explain part of the performance of the firms in a particular industry and country.

The impact of factors with broader economic significance is captured by the year effect. This effect also represents the impact of a global factor that is common to all firms

[11] $(\alpha\gamma)_{kt}$ is not a product of two variables, α and γ. It simply indicates the interaction between two main

across all countries. Finally, firm effects comprise all firm-specific factors such as heterogeneity among firms in tangible and intangible assets due to differences in reputation, operational effectiveness, organizational processes and managerial skills. Firm effects are nested within industry and country, while the other three effects (country, industry and year) are main effects.

The model is a tractable but necessarily restricted representation of reality. We assume that industry effects are the same for all firms across the countries. It is not entirely unreasonable to argue that industry effects may differ across countries, for example due to different capital-labor ratios and relative industry specialization. A second implication is that the model assumes that global factors affect all firms equally. This means that FedEx and GM are equally affected by the global factor. This is somewhat unrealistic, since each company has a different exposure in terms of sales and assets globally. Similarly, we assume that the country factors impact all firms within the country equally, meaning that British Airways and Glaxo have the same exposure to the UK factor. The results of our study are hence conditioned to the extent our model sufficiently represents economic reality.

Instead of estimating the regression estimates of the parameters, we estimate the variance explained by the independent variables. Since our independent effects are random, estimating regression parameters has less information content than estimating variances or changes in performance. We thus specify a variance components equation to estimate the contribution of the independent variables on the variability in the dependent variable.

Decomposing the total variance in the dependent variable (profitability measure) develops the equation for the estimation of variance components into its components (equation 1) as follows:

$$\sigma^2_r = \sigma^2_\alpha + \sigma^2_\beta + \sigma^2_\phi + \sigma^2_\gamma + \sigma^2_{\alpha\gamma} + \sigma^2_{\beta\gamma} + \sigma^2_{\alpha\beta} + \sigma^2_\varepsilon \qquad (2)$$

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effects α and γ. The same applies to the other interaction terms.

The dependent variable r_{kijt} (see equation (1)) has constant variance and is normally distributed because they are linear combinations of independent normal random variables.

The variance components procedure used here is similar to the one employed in the studies of industry and firm effects (Rumelt, 1991; McGahan and Porter, 1997; Hawawini et al., 2000). This procedure decomposes the total variance in the dependent variable (profitability measure) into components, where each component corresponds to an independent variable (e.g. country, industry, year and firm). In other words, this procedure estimates the proportion of dependent variable variance explained by the independent variable.

The difference between this study and the previous studies (Rumelt, 1997; McGahan and Porter, 1997) is that our model contains country variables but excludes corporate effects. Country factors are excluded in earlier research because the key emphasis of the strategic management studies has been the relative importance of industry and firm effects. The exclusion of corporate effects here is primarily due to the nature of the performance measures and the data used, which are elaborated in the next sections.

We use the VARCOMP procedure in SAS software to estimate the different variance components. The disadvantage of the variance components estimation is that the procedure does not provide reliable tests for the significance of the independent effects. Since the independent effects are assumed to be generated by an independent random draw from an underlying population of the class of the effects, the null hypothesis that some of the variance parameters are zero lies on the boundary of the parameter space. This characteristic presents a non-standard problem for producing significance statistics.

One approach to solve this problem is to use nested ANOVA techniques that consider the effects to be fixed (Rumelt (1991) and McGahan and Porter (1997)). The ANOVA approach generates F-statistics for the presence of the independent effects. While the fixed effects transformation resolves the significance testing problem of the variance components procedure, it restricts the critical assumption of randomness of the

independent effects. An important characteristic of the assumption of randomness is that results regarding both the presence and the importance of the various independent effects can be generalized over the population as a whole.

This study uses a random effects ANOVA model that regards all the independent effects specified in the model as generated by random processes, consistent with the variance components assumptions. The random ANOVA model departs from its fixed effect version only in the expected mean squares of the independent effects and the consequent test statistic.

PERFORMANCE MEASURES

Past studies in strategic management on performance employ Return on Assets as a performance measure. The problems with accounting numbers are well-known and have been periodically recounted (Harcourt, 1965; Fisher and McGowan, 1983; Young, 1997). The key problem with accounting ratios is that they do not reflect economic performance – they do not indicate whether the firm has created economic value.

The Return on Assets (ROA) measure, traditionally used in the strategic management studies, encounter this problem and others that are characteristic of accounting numbers. If a measure has to reflect economic value, it has to satisfy three essential requirements: (a) the measure reflects the true level of revenues, costs and assets; (b) it is cash-flow based and (c) it is adjusted to the opportunity cost of capital. Accounting measures such as ROA tend to fail all three tests. First, the numerator of such measures, which has some measure of absolute profit, is a book value that may be distorted by accounting conventions. Inventory valuation, treatment of stock options, mergers and acquisition accounting and treatment of R&D and write-offs are among the most common source of distortions, typically affecting costs or assets. Typically, the items that influence the numerator also influence the denominator. For instance, asset write-offs not only reduce current income, but also the asset base of the firm, thus

distorting profits while correcting the level of assets. Similarly, if the firm chooses to measure inventory based on Last In First Out (LIFO) method, it will show higher cost of sales and hence lower inventory values in times of inflation. The question remains whether the inventory should be adjusted for inflation. More generally, inventory, like other assets, is measured at historical costs and not at replacement value. The existence of different accounting policies and conventions, and management's power to choose between them, means that alternative but equally acceptable methods in the legal sense may generate accounting measures.

Second, accounting profits do not reflect cash-flow income. The most common source of distortions is non-cash income and provisions. Finally, accounting measures do not provide a benchmark to evaluate profits simply because they do not adjust for the opportunity cost of capital. Fisher and McGowan (1983) argue that "there is no way in which one can look at accounting rates of return and infer anything about relative economic profitability...."

In this paper, we will test for two value-based measures of firm performance as an alternative to the accounting-based ROA: Market value (MV) per dollar of capital employed (CE), and economic profit (EP) per dollar of capital employed, [12] where capital employed is the sum of equity capital and debt capital. MV/CE is a relative market-to-book measure that is similar to versions of Tobin's Q, where the market value is divided by book value (instead of replacement value). Alternatively, we can employ Total Market Value (TMV), which is the market value of the firm's capital above its book value.

The second measure we use is economic profit per dollar of capital employed. EP is a residual income measure – it is the profit that remains after the claims of shareholders and bond holders have been satisfied. In other words, the income is adjusted for capital costs and hence risk and the time-value of money. EP is usually measured as Net

[12] See for example Young and O'Byrne (2001). Others use different names for the same concept of residual income – Copeland, Koller and Murrin (1990) call the difference between cash returns on invested capital and the capital charge the economic profit model.

Operating Profits After Tax (NOPAT) less capital costs. The measures are adjusted to accounting policies and conventions that create distortions. NOPAT is measured on a cash-flow basis and assets (i.e. capital employed) are adjusted to reflect both tangible and intangible assets (such as R&D investments). Stewart (1991), Martin and Petty (2000) and Young and O'Byrne (2001) provide an overview of common adjustments that are made to financial statements to calculate these measures.

The two measures are linked conceptually. MV is an external market measure, while EP is an internal operating measure that is typically under management control. Investors interested in the value of their financial assets look at the market measure to infer value creation. For manager's actions to be aligned with those of shareholders, the firm's operating performance must be linked to the market performance. Since market values are the expectations of the ability of the firm to generate economic profits, the net MV, market value less capital employed, reflects the market's expectation of the firm's future economic profitability (EP).

It should be noted that EP and TMV do not provide a perfect solution to the performance measurement problem. While conceptually economic profits occur when returns on capital are greater than the cost of capital, in practice this entails problems. One problem is that regulators do not require companies to declare their economic profits, but only accounting profits. This means that a data set of firms with EP and CE is not readily available. Second, the measures, particularly EP and CE, are connected, ironically, to accounting data, as EP and CE are calculated after adjustments to accounting numbers. There is no standard list of adjustments that is agreed upon by experts, and such adjustments may also vary depending on the industry and country practices.[13] In other words, while EP and TMV offer somewhat better measures, they suffer from their own disadvantages.

[13] The consultants Stern Stewart who have popularized the concept of Economic Value Added, a concept similar to EP, have developed 160 adjustments though in practice only a few are used depending on the client.

DATA AND SAMPLE

The data sets on EP, TMV and CE used in this study are sourced from the consulting firm Stern Stewart. The Stern Stewart data are published yearly in *Fortune* and in business journals in Europe and Asia. In addition, the data is also published each year in the *Journal of Applied Corporate Finance*. The Stern Stewart data sets are available for North American, European, some Latin American countries (Mexico and Brazil), some Asian countries (Japan and a composite rest of Asia data set) and Australia. The US data set is by far the largest containing information on 1000 listed companies for periods up to 23 years (1977-1999).

The other country data sets are much smaller, with some data sets as small as 75 firms (for Switzerland). A more important feature of the data is the limited longitudinal nature of the data sets for most countries, in particular the interesting ones such as those in Latin America or Asia.

Our focus is on estimating the impact of home countries not only on a cross-sectional basis, but also longitudinally, since the independent variables of country-year and industry-year as well as firm effects require longitudinal data. Given the data restrictions, we looked for desirable properties of the countries, such as different levels of GDP, types of cultural and corporate governance systems, from the perspective of the home country effect.

We choose a combination of large and small open economies (using GDP as a proxy for home market size) and different corporate governance and cultural systems. Corporate governance is concerned with the reduction of agency costs that occur from the separation of ownership and control, that is "how do the suppliers of finance assure themselves of getting a return on their investment?" (Shleifer and Vishny, 1997). Barca and Becht (2001) identify two types of ownership (concentrated versus dispersed) and two types of control (concentrated versus dispersed). Countries such as US and the United Kingdom have dispersed ownership and dispersed control, while many continental European

countries such as Belgium and Germany have the tendency to exhibit dispersed ownership with concentrated control. In the case of Belgium, this primarily occurs through pyramid structures (Becht and Chapelle, 1997), while in Germany this occurs through the role of banks, which concentrate voting power by representing proxy votes (Becht and Bohmer, 1997). Another significant structure is the prevalence of large block holders in the ownership structure of continental European firms, where concentrated block holders and dispersed minority shareholders share ownership, but block holders retain control. There are specific advantages and disadvantages to these widely known systems (see Barca and Becht, 2000), but there is little direct evidence to show how such differences may influence firm competitiveness at the product-market level, particularly in international markets (either through lower capital costs or better investment decisions).

The data sets used in this study are for US, UK, Germany Belgium, Netherlands, and Luxembourg (Benelux). For the purposes of this study, a firm's home country is where its stock is traded.[14] For the UK, the data set contains 500 listed companies covering a 9 year period (1989-1997), while the data sets for Germany and the Benelux countries contains 200 and 150 firms respectively for a 5 year period (1993-1997). We collapse the Benelux countries into one 'country' for two reasons. First, the Benelux process was a precursor to the larger EU integration process, and as such served as a model for the initial development of the EU. Both capital and factor market integration within the Benelux is generally much higher than the EU average. For instance, Belgium and Luxembourg in effect had a single currency for many years before the Euro as both the Belgian and Luxembourg Francs were pegged one to one. Second, because of the shallowness of the local equity markets and the absence of an equity culture, the

[14] Some might argue that this distorts reality because firms are known to list their equity in a foreign stock exchange. There are some well-known examples of European firms listing on NYSE and Nasdaq. We see, however, that this is fundamentally a recent trend. Furthermore, most firms are invariably listed on their domestic stock exchange as well and we would suspect that the proportion of firms listed in foreign countries is relatively small.

population of firms is much smaller than in the US or UK. For these reasons, a pooled sample for Benelux firms, despite some obvious limitations, may still serve the purpose.

The six countries differ in terms of size of their economies (US, UK and Germany being large open economies and the Benelux countries being small open economies). In terms of their corporate governance systems, the US and UK typically understood as representing the Anglo-Saxon systems of dispersed ownership and control, while Germany and the Benelux are characteristic of the presence of large block holders or other concentrations of voting power.

While they provide data on conceptually better measures than pure accounting measures, the Stern Stewart data sets are proprietary. However, this has not discouraged the usage of the data sets in empirical research in the finance and accounting fields.[15] In recent years, several companies have applied these residual income metrics (not necessarily Stern Stewart measures) to measure performance both in the US and in other countries (Martin and Petty, 2000).

Stern Stewart calculates EP and TMV after making adjustments for major accounting distortions and the cost of capital. The companies are selected each year by Stern Stewart based on their TMV performance and the top performers are listed for each country. Consequently, the data set has the disadvantage that it contains only the best performing companies. To the extent size drives performance, the data set could be dominated by large companies. The evidence on the relationship between relative size (i.e. market share) and performance has been widely investigated, with the results ambiguous and context-specific (Schwalbach, 1991). To some extent, we try to account for size bias by scaling EP and TMV for size by dividing both measures by the amount of capital a company employs.

Past studies of performance determinants, with the exception of Schmalensee (1985) and Rumelt (1991) who use the Federal Trade Commission (FTC) data sets, use

[15] For instance, see Martin and Petty (2000).

the Compustat data base. Both have their advantages and disadvantages. The FTC data set covers only manufacturing firms, while the Compustat covers both manufacturing and service companies, and therefore offers a better representation of the economy. A second difference between the Compustat and FTC data sets is that the former provides data at the business segment level, while the latter provides data at the business-unit level. Business-segments were defined by the US Standard Industry Classification system based on common production processes and may have more than one organizational units, and hence may underestimate industry effects (McGahan and Porter, 1997).

Our data set retains the advantage of the Compustat data by covering both manufacturing and service industries. One disadvantage is that data on these measures is available only at the corporate level. Market-level data is usually available at the corporate level, but obviously not at the business-unit level. This nature of the data places some specific requirements on how we assign firms into industries. Another disadvantage of the data is that it contains only the best performing companies public companies and hence is subject to survivor bias. A third bias is that firms from small open economies are likely to be more internationally active than firms from larger home markets, for reasons that were suggested earlier. Such biases tend to restrict the generalizability of the results, which are discussed in a later section.

Industry definition is a much debated theoretical issue within strategic management. The effectiveness of Porter's (1980) structural analysis of industries depends to a certain extent on how industries are defined in the first place. However, research has relied on classification systems that have been developed for accounting and reporting purposes. The primary system was the SIC system, which classifies firms in to industries at into different levels of sector aggregation. The four-digit level is the lowest level of aggregation, while a single digit SIC code refers to a broad industrial sector. One critique (McGahan and Porter, 1997) has been that the system is based on production technology, and not on other factors such as demand and customer segmentsAnother critique was the SIC does not new industries with sufficient detail by excessively aggregating distinct industries.

Whether a four-level classification or a three-level classification is better may depend upon the nature of the industry itself.

Similar to McGahan and Porter (1997), we use the SIC system to classify the firms into industries across all the countries. Using a single system will mean that we will be able to make standardized definitions of industry. In comparison to the classification system used by international finance studies, the SIC system is more detailed and hence provides more homogeneous groups of firms. For instance, Rouwenhorst (1999) uses seven broad industry classifications.[16] One reason may be that there is less scope for error, when the classification is kept broad. This makes sense since the probability for such errors is particularly acute in the case of cross-country samples.

To account for the market nature of the data, we use the 3-digit level SIC level. Both the international and the market nature of the data dictate that we choose a broader classification than the 4-digit level, and also cover related segments. While a number of firms are active in multiple businesses, most of them tend to be diversified along related businesses (Villalonga, 2000). However, we drop firms that are reported as conglomerates (such as GE (US) and Hanson (UK)).

Discarding conglomerates also means that we discard 'corporate' effects from the empirical model. Corporate effects were investigated by the strategic management studies (Rumelt, 1991; McGahan and Porter, 1997; Brush, Bromiley and Hendrickx, 1999, Bowman and Helfat, 2001). The results are not comparable due to differences in data sources, methods and sample construction. In general, the early studies (Rumelt, 1991 and McGahan and Porter, 1997) suggest low and negligible corporate effects, while the later studies suggest a higher corporate effect. One reason for these differences is some studies discard single-business firms, which is likely to bias the estimates of corporate effects upwards (Bowman and Helfat, 2001).

[16] This is changing in corporate finance research conducted on US data sets. Fama and French (1997), for instance, use a classification of 48 four-digit SIC industries.

We follow Wernerfelt and Montgomery's (1988) method, which while compromising specificity, uses better performance measures (market measures). In the modeling approach of this paper, corporate effects will add on to other firm effects such as business-level effects. In other words, the composite firm effect reflects both corporate and business-level effects (whether business-unit (Rumelt, 1991) or business-segment (McGahan and Porter, 1997)). To enable comparison with past studies, we also use ROA as a performance measure. ROA data is sourced from the Compustat data base.

For generating the sample, we screen the data in different ways. We dropped firms that did not contain a primary SIC designation or were identified by SIC as 'not elsewhere classified'. Further, firms with missing data for one or more years were discarded as well as firms that did not report their primary activity in the same industry over the sample period. The sensitivity of the model to detect inter-country and inter-industry variances will depend to a certain extent on the number of countries and industries (a larger number can identify small deviations in performance). The number of industries is reasonably large, while the number of countries is only 4. If industry data from only one country is available, then inter-country variance cannot be estimated in this industry. We include those industries that have data for at least three of the four country sets.

The sample data set has 36 industries, when the performance measures are TMV/CE and EP/CE and 29 industries when the measure is ROA. The sample covers the period 1993-1996. Information on the industry classification of European firms according to the SIC system is available from the Amadeus database. The sample contains 1035 firms (for TMV/CE and EP/CE), with 504, 333, 115 and 83 US, UK, German and Benelux firms respectively. The ROA sample contains 739 firms, with 341, 245, 98, 55 US, UK, German and Benelux firms respectively.

Tables 1 to 3 provide the means by industry across the four data sets for TMV/CE, EP/CE and ROA. We observe that US firms have better performances in terms of TMV/CE and EP/CE, on average, than UK, German and firms from the Benelux countries.

Performance also varies between industries for the same country, and between countries for the same industry. This indicates the presence of not only main effects (industry and country), but also interaction effects since the variation across industries for the same country or vice versa is not uniform.

The correlation between EP/CE and TMV/CE for each country sample and the combined sample are shown in table 4. We observe some consistent correlation of 0.59 in the country samples, while the German sample shows a correlation of 0.18. For the overall sample, the correlation is 0.44. The divergence in correlation, and particularly the low correlation in the German sample, can be traced to the fact that any single period measure such as EP, by definition, will have only limited explanatory power when regressed with market measures. Evidence shows that in that respect, EP does not perform any better than other single period measures such as earnings, but the appeal of EP rests on its conceptual advantages.[17]

EMPIRICAL RESULTS

We examine the results of the estimation of the country, industry, firm, year and the interaction effects. Table 5 gives the variance components estimates of the independent variables that add up to the variation in the dependent variables (TMV/CE, EP/CE, and ROA) and the proportions of variance in the dependent variable explained by each of the independent variable. Negative estimates in variance component estimates do not contain any explanatory power, since variances cannot be negative. The usual approach with regard to negative effects in variance estimations is to consider such effects as equal to zero (Searle, 1971, Neter, Kutner, Nachtsheim and Wasserman, 1996).

In summarizing the results, we make four observations. First, industry effects are larger than home country effects for EP/CE (1.88% explained by industry factors versus 0.60% by country factors of total variance) and TMV/CE (4.69% versus 0.34% of total

variance), while for ROA, country effects are much larger than industry effects (9.17% versus 3.28%). This may be a reflection of the fact that raw accounting ratios such as ROA are often influenced by country-specific accounting idiosyncrasies such as expensing versus capitalization of intangibles such as Research and Development and Goodwill, accounting for financial leases, and asset re-valuations. For instance, in the Benelux countries, goodwill is written off immediately, while in Germany, US and UK, they can be capitalized and amortized, though the maximum number of years over which this can be done varies. Similarly, while R&D is capitalized in European countries, in the US they have been treated as expenses. Similarly, while capitalization of financial leases is required in the Benelux countries, in Germany there is no such requirement. To an extent, distortions caused by these cross-country accounting differences are mitigated when EP and TMV are used, as some of the major adjustments, in addition to a capital charge, relate to these accounting policies.

Second, year effects are consistently lower across all the measures (0.43% for TMV/CE, 0.40% for EP/CE and 0.57% for ROA). Thirdly, business cycle effects (country-year and industry-year effects) are either small positive, but statistically insignificant at the 5% level, or small negative (i.e. equal to zero). Industry-year effects are significant only for ROA, with the explanatory power of this variable being less than half-a-percent of total variance in ROA.

Third, the country-industry interaction variable has as large an impact on operating performance as industry effects, particularly on operating performance. . Both industry and country-industry interaction effects explain 1.88% of variance in EP/CE, while the country-industry effect explains 3.41% of variance in ROA when compared to 3.28% explained by industry effects. In the case of TMV/CE, industry effects explain 4.69% and are higher than country-industry effects by 1.77%.

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[17] See Biddle, Bowen and Wallace (1998).

Fourth, of all the explanatory variables, firm effects explain the most in performance variation across the three performance measures. In the case of TMV/CE, this effect explains 44.17% of TMV/CE variance, while for EP/CE and ROA, the proportion of variance explained is somewhat lower (35.65% for EP/CE and 35.19% for ROA). Finally, the error variance is larger than any of the variance components estimated by the model. The error variance is similar for TMV/CE and ROA (47.25% and 47.41% respectively), but higher for EP/CE (59.09%).

DISCUSSION OF RESULTS

This study's objective was to examine the influence of home country on firm performance against the background of increasing market integration across the world's economies. What do the results of the empirical analysis tell us?

First, both industry and country factors appear to have less influence on performance than firm factors, when measured in terms of economic profit and market value. At least two related reasons could be the cause of the unimportance of industry factors: firstly, industry definitions can be subjective and secondly, industry boundaries are in a constant state of flux due to changes in technology, deregulation, and firm strategies themselves.

A reason for the low explanatory power of home country could be that the geographical, legal and institutional framework for the companies in the sample had expanded beyond the national boundaries. That is, large companies in the UK, Germany and Benelux countries may be increasingly influenced by EU policies. Another possible explanation may be that internationalized firms increasingly proxy home country effects

of competitors by means of direct investments, acquisitions or mergers to establish centers of excellence in foreign countries to access location-specific knowledge.[18]

A third reason for the apparently low influence of the home country may be the opposite of internationalization. Firms may be more influenced by the particular region within the country where their primary activities are located, and the country variable thus does not ideally proxy for the impact of geography. This would require us to adapt our model with regional variables that represent intra-country regions.

The low country effects may also be an artifact of the sample used. One reason may be that collapsing the Belgium, Netherlands and Luxembourg into a 'Benelux country' decreases the possibility of discerning a country effect. The power of the test to discern country effects decreases as the number of countries in the sample decreases. Another reason for the low country effects could be that firms from small open economies tend to be more international than those from larger markets. The sample contained firms from the three Benelux countries, and hence may reflect this increased internationalization rather than the true underlying country effect. Firm effects, then, would imply some country effect. Further, since firms from small markets may have high levels of internationalization, the country effect may be dampened because of this feature of firms based in Benelux countries. However, the effect of the Benelux sample is somewhat minimized as they comprise only 8% of the total sample.

The low country effects and higher industry effects may also be a reflection of the changing economics in many industries. Globalization in many industries has been driven by increasing demand homogeneity and supply factors (economies of scale, global supplier networks, and knowledge development and exploitation across borders being some the important ones), as well as multi-market competition (i.e. interdependence of competitive positions between countries). It could be argued that as countries liberalize their domestic product markets, dismantle barriers to capital movements and remove

[18] See Frost, Birkinshaw and Ensign (2002)

distortions to competition, the opportunities for firms to compete across borders and organize their value chains on a cross-border basis has increased to a great extent. This implies that the geographical boundaries of industries are not constrained by national borders and as a consequence might contain elements of variability that were previously part of the country factor. We would expect that as industries get exposed more and more to the forces of market integration, the importance of global industry factors is likely to increase, as our results suggest. Industry globalization may favor the view that strategies and organizational alignments have to be focussed on industry factors (such as global product divisions superseding country organizations).

Out-of-sample evidence from international portfolio diversification studies affirms the growing importance of industry effects compared to country effects and that the ROA result of this study may be more due to differences in accounting conventions across countries than real economic performance. Industry factors have been gaining more importance at the expense of country factors in the 1990s than in the previous decades (Cavaglia, Brightman and Aked, 2000; Diermeier and Solnik, 2000; Kernels and Williams, 2000). Freiman (1998) demonstrates that the correlation among European stock indices has increased in the 1990s and the importance of industry factors has increased over time for European stocks.[19]

While the comparative advantage effects are low, they are significant and are as important as industry effects. Even though limited by the nature of the sample used, this offers some potentially important information as to the effect of this variable. While the countries in the data set differ in terms of institutional, legal, economic and social systems, such differences may not be as great as one would like to study, such as those between Japan, US, Latin America or perhaps Eastern Europe.

The other question that would beg investigation is whether such advantages would only be available to local firms. Even when there are no restrictions on location, how can

domestic firms still retain the ownership of superior assets developed in the national clusters of industrial specialization? These questions are important because in a world of integrated and open markets, if some countries are more conducive for the development of certain type of industrial activities, then foreign firms would establish their operations in those countries, and thus negate any locational advantages that the home country firm could have enjoyed.

Year effects or the effects of global economic conditions tend to have an impact only at the margins. We observe low and negligent business-cycle effects. The reason for the low country-year effects may be the nature of the sample, since the countries involved are much more integrated in the global economy than others such as in Eastern Europe or Latin America. The low business-cycle effects at the industry level (cyclical effects of the industry) is in agreement with much of the past results for this variable (Rumelt, 1991; McGahan and Porter, 1997; Hawawini et al., 2001).

The amount of error variance in this study is large, around 47% for TMV/CE and ROA, while approaching 60% for EP/CE. While though large, they compare to Rumelt (1991) and McGahan and Porter (1997), which reported high error variances of 44.5% and 49% respectively, at least for TMV/CE and ROA. The large error variance may be due to the fact that the sample size was not large enough (even though most of the estimates were significant) and other factors that are not captured in the model.

If performance is not explained to a great extent by external factors such as nation, industry, year (and their interactions), then the question is what drives firm value. We find that firm-specific factors dominate explained variation in performance. The domination of firm effects is robust across the different performance measures, which gives support for the findings of Rumelt (1991), McGahan and Porter (1997) and Hawawini et al. (2001).

[19] It is important to note that the emphasis of the finance studies is to explain volatility in stock price and identify factors around which risk reduction (and portfolio diversification) strategies can be organized.

Irrespective of a firm's country of origin and the characteristics of its industry structure, internal assets and competencies are central to its competitive advantage. Superior performance and competitive advantage seems to be driven mostly by firm-specific factors rather than external influences. This extends past evidence that firm resources are central to competitive advantage under conditions of international competition.

We presented several explanations as to why industry and country effects could be important. However, our results show that these two effects are far less influential than the firm-specific influences. Given the relative proportions of variance explained by country, industry and firm factors, it is reasonable to infer that any measurement errors that make the estimates imprecise are of secondary importance.

While country and industry factors do influence the context in which choices are made, such influences often do not explain the firm's competitive advantage. The fact that a firm operates in a particular country or industry need not automatically confer it with a competitive advantage because these external factors benefit or disadvantage to a certain degree all firms in that environment. But depending on their own relative competencies, the dynamics of the external environment may imply different opportunities and threats to the firms. Firms face differential challenges and threats that are not only a product of the country or the industry features but also a product of their own choices in the past.

CONCLUDING REMARKS

The impact of home country on firm performance is an issue that had not found sufficient and direct empirical attention. This study's objective was to examine the importance of the home country to firm performance in a world of increasing market integration. This study's finding that home country and industry effects are relatively less important than

firm-specific factors in driving value agrees with some of the preliminary evidence in international economics and finance as well as the strategic management literature.

This does not necessarily mean that countries do not influence firm success. Incomes, consumer tastes, and regulations differ across countries. Differences also persist in the ability of countries to provide legal and financial systems that guarantee property rights, investments and enforcement of contracts that make the economic system to work. Particular social systems encourage certain type of managerial behavior and decision making and again this could influence firm performance. However, the findings that corporate success is predicated on internal factors would favor the view that the development and leverage of unique resources are more the result of managerial capabilities than simply being in the right environment, whether country or industry.

Our study is not without its drawbacks, many of which arise due to its exploratory nature. In particular, it covers firms in economies that are considered to be relatively more integrated with each other. It would be interesting to see if the results hold if we include Japanese or Korean firms in the sample, for example. The nature of the sample, with mostly international firms, also tends to dampen the country effects. Second, the sample may also dampen the comparative advantage effect because it may not contain the countries that truly have a comparative advantage in a specific industry. The sample also may dampen the country effect, since the number of countries in the sample is relatively small, further accentuated by collapsing Belgium, Netherlands and Luxembourg into a Benelux category. Nevertheless, out-of-sample evidence does show that industry factors are increasingly gaining in importance at the expense of country factors, a result in conformance with this paper's findings. Thirdly, we use data at the 3-digit level that was mandated by the choice of performance measures – this is likely to bias industry effects downwards, though not necessarily as evidenced in the continuing debate on industry definition.

Fourthly, international differences in accounting principles and conventions make any study that uses cross-country accounting data risky. Some aspects of the data and the measures used tend to minimize cross-country differences in accounting, particularly the use of a data set from a single source (Stern Stewart) and the use of a market measure (TMV).

Finally, our study does not uncover whether the home country effect has evolved over time. This study's data set covers the mid-1990s, the decade when globalization has come to be more widespread in business. Given the complementary evidence in international economics and finance, we would suspect that the home country effect on firm performance has been steadily decreasing over time. These questions merit further research.

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TABLE 1

Mean TMV/CE by industry and country for the period 1993-1996 [a]

Industry Name	US	UK	Germany	Benelux	Cross-Country
Aerospace & Defense	0,565	0,209	0,204	1,056	0,452
Car Parts & Equipment	0,831	0,479	0,513	-0,051	0,617
Chemicals	1,047	0,543	0,158	-0,001	0,771
Plastics & Products	0,578	1,052	-	0,925	0,864
Apparel	0,731	0,736	2,114	-0,070	1,012
Appliances & Home Furnishing	0,517	0,653	0,358	0,653	0,542
Beverages	0,583	0,635	0,600	1,819	0,690
Personal Care	1,220	0,917	1,021	-	1,129
Paper & Products	1,214	0,723	0,458	0,081	0,889
Discount Retailing	1,105	1,644	0,673	-	1,164
Electrical Products	1,563	-	0,609	0,025	1,139
Electronics	0,854	1,305	-	0,652	0,931
Instruments	0,842	1,181	-	-0,051	0,910
Food Processing	0,809	0,447	0,254	1,024	0,673
Food Distribution	4,788	0,647	0,226	0,965	1,897
Food Retailing	0,249	0,575	-	1,440	0,544
Oil & Gas	0,669	0,593	-	0,338	0,636
Drugs & Research	1,471	2,476	0,594	1,196	1,634
Drug Distribution	0,608	1,080	1,182	0,382	0,748
Medical Products	0,782	0,333	0,594	-	0,724
Building Materials	1,378	0,581	0,488	-0,222	0,790
Construction & Engineering	1,395	1,138	0,624	0,071	0,940
Eating Places	1,368	1,171	-	0,198	1,161
Entertainment	0,925	2,942	-	1,658	1,848
Hotel & Motel	0,205	1,664	-	0,205	0,603
General Engineering	0,542	0,837	0,266	0,222	0,549
Machine & Hand Tools	0,896	0,903	0,249	-	0,701
Packaging	0,392	0,337	0,401	0,322	0,367
Steel	1,679	1,208	-	-0,265	1,311
Computer Software & Services	2,275	0,438	1,403	4,630	2,017
Broadcasting & Publishing	2,792	2,142	-	3,123	2,549
Printing & Advertising	1,654	1,709	0,317	-	1,487
Industrial Distribution	2,827	-0,034	1,939	2,457	1,515
Pollution Control	3,016	-0,211	-	0,385	1,501
Personnel-Supply Services	1,252	0,724	-	3,583	1,321
Transportation Services	0,013	1,055	2,794	0,056	0,691
Mean	1,212	0,938	0,752	0,865	0.942

[a] EP = Economic Profit; CE = Capital Employed; TMV = Total Market Value

TABLE 2

Mean EP/CE by industry and country for the period 1993-1996 [a]

Industry Name	US	UK	Germany	Benelux	Cross-Country
Aerospace & Defense	-0,004	-0,067	-0,079	0,003	-0,028
Car Parts & Equipment	-0,011	-0,026	-0,036	-0,030	-0,020
Chemicals	0,010	-0,031	0,010	-0,006	0,002
Plastics & Products	-0,003	-0,011	-	-0,016	-0,009
Apparel	-0,004	-0,031	-0,024	0,011	-0,021
Appliances & Home Furnishing	-0,028	-0,029	-0,081	-0,017	-0,037
Beverages	-0,019	-0,010	0,122	-0,015	0,017
Personal Care	0,000	-0,001	0,039	-	0,007
Paper & Products	0,013	-0,011	-0,041	-0,009	-0,002
Discount Retailing	0,002	0,003	-0,001	-	0,002
Electrical Products	-0,028	-	-0,152	-0,005	-0,051
Electronics	0,008	0,008	-	0,005	0,008
Instruments	-0,004	-0,004	-	-0,021	-0,005
Food Processing	-0,009	-0,013	0,000	0,015	-0,007
Food Distribution	0,067	-0,014	-0,009	0,027	0,022
Food Retailing	-0,028	-0,007	-	0,009	-0,015
Oil & Gas	0,005	-0,050	-	-0,014	-0,010
Drugs & Research	0,019	-0,014	0,031	0,001	0,011
Drug Distribution	-0,022	0,012	-0,093	-0,024	-0,031
Medical Products	-0,020	-0,037	-0,023	-	-0,022
Building Materials	-0,004	-0,030	0,012	-0,001	-0,012
Construction & Engineering	0,032	-0,057	0,024	0,007	-0,028
Eating Places	0,014	-0,001	-	0,007	0,008
Entertainment	-0,009	0,049	-	0,012	0,017
Hotel & Motel	-0,056	-0,043	-	-0,014	-0,045
General Engineering	-0,035	-0,023	-0,005	-0,028	-0,018
Machine & Hand Tools	0,022	-0,034	-0,046	-	-0,016
Packaging	0,007	0,007	0,002	-0,002	0,004
Steel	-0,024	0,033	-	-0,001	-0,010
Computer Software & Services	0,026	0,023	0,035	0,186	0,029
Broadcasting & Publishing	0,030	0,057	-	0,043	0,043
Printing & Advertising	0,030	-0,010	0,008	-	0,010
Industrial Distribution	0,046	-0,007	-0,005	0,083	0,021
Pollution Control	0,086	-0,016	-	0,009	0,039
Personnel-Supply Services	0,030	-0,028	-	0,105	0,012
Transportation Services	-0,043	-0,013	0,001	-0,049	-0,027
Mean	0,003	-0,012	-0,013	0,009	-0,003

[a] EP = Economic Profit; CE = Capital Employed; TMV = Total Market Value

TABLE 3

Mean ROA by industry and country for the period 1993-1996 [a]

Industry Name	US	UK	Germany	Benelux	Cross-Country
Aerospace & Defense	4,038	8,506	0,803	-	5,424
Car Parts & Equipment	4,433	5,008	4,989	8,576	5,075
Chemicals	7,045	9,600	6,491	5,407	7,153
Plastics & Products	8,660	13,829	-	5,058	10,944
Apparel	9,466	7,265	10,956	7,437	8,623
Appliances & Home Furnishing	5,374	9,289	2,062	9,270	6,314
Beverages	5,957	8,126	12,564	10,648	8,618
Paper & Products	3,914	11,217	0,628	7,968	5,690
Discount Retailing	6,323	10,542	4,126	-	6,824
Electrical Products	4,965	-	4,834	10,758	5,505
Electronics	4,851	17,707	-	3,678	10,110
Instruments	7,352	15,995	-	2,820	9,981
Food Processing	8,425	7,365	7,468	7,526	7,933
Food Retailing	5,980	10,515	-	4,942	7,319
Oil & Gas	2,639	6,729	-	12,259	4,043
Drugs & Research	7,701	10,329	7,504	6,795	8,199
Drug Distribution	4,495	-	8,963	5,191	5,601
Building Materials	6,796	9,433	10,731	9,245	8,919
Construction & Engineering	4,619	5,186	5,830	6,933	5,417
Eating Places	6,327	8,749	-	5,391	7,058
Entertainment	7,275	15,711	-	13,210	12,520
General Engineering	6,317	6,765	4,132	6,205	5,516
Machine & Hand Tools	5,783	7,915	2,301	-	5,333
Packaging	-	11,894	3,885	2,640	7,765
Steel	3,770	12,471	-	-3,742	3,980
Computer Software & Services	5,700	13,501	10,223	18,255	7,726
Broadcasting & Publishing	6,576	17,176	-	16,785	13,112
Printing & Advertising	4,848	7,582	2,425	-	5,794
Industrial Distribution	4,746	15,407	5,736	9.875	9,345
Transportation Services	2,800	8,873	3,100	-	5,202
Mean	5,765	10,453	5,702	7,753	7,418

[a] EP = Economic Profit; CE = Capital Employed; TMV = Total Market Value

TABLE 4

Correlation between EP/CE and TMV/CE [a]

	EP/CE	TMV/CE				
		US	UK	Germany	Benelux	Cross-country
EP/CE	1.00	0.5998	0.5912	0.1868	0.5916	0.4374
TMV/CE		1.00				

TABLE 5

Country effects

Absolute values of the variance and relative proportions contributed by independent variables for years 1993-1996 [a]

Variance Component	TMV/CE		EP/CE		ROA	
	Variance Estimate [†]	Percentage (%)	Variance Estimate [†]	Percentage (%)	Variance Estimate [†]	Percentage (%)
Firm	1.967*	44.17	0.00380*	35.65	25.151*	35.16
Industry	0.209*	4.69	0.00020*	1.88	2.306*	3.28
Country	0.015*	0.34	0.00006*	0.60	6.460*	9.17
Year	0.019*	0.43	0.00004*	0.40	0.398*	0.57
Country-Industry	0.130*	2.92	0.00020*	1.88	2.399*	3.41
Country-Year	0.001	0.02	0.00005	0.50	-0.069	0.00
Industry-Year	0.008	0.18	-0.000004	0.00	0.322*	0.46
Error	2.104	47.25	0.00631	59.09	33.384	47.41

* - estimates significant at the 5% level

[a] EP = Economic Profit; CE = Capital Employed; TMV = Total Market Value
[a] EP = Economic Profit; CE = Capital Employed; TMV = Total Market Value
[†] P<.05